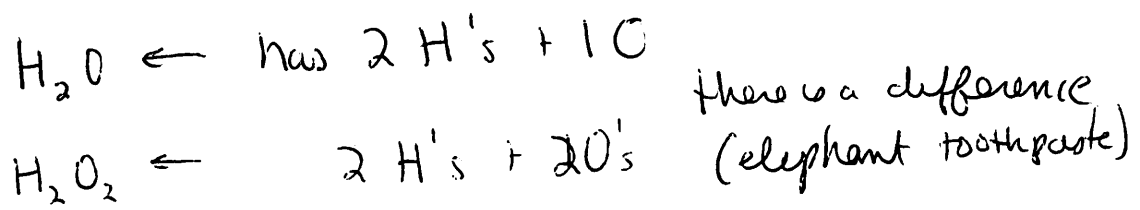
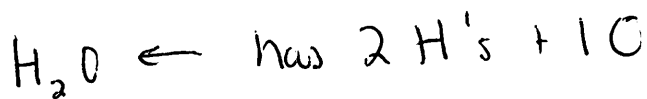


Chemical Formulas + Compounds

ch 7-1

7.1

Chemical Formulas are v. significant



Once formula is made subscripts can't be changed

(formula unit \rightarrow simplest unit indicated by the formula of any compound)

Formulas mean many things $\text{H}_2\text{O} \rightarrow$ mean 1 water molecule

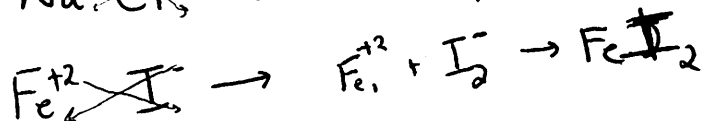
\rightarrow 1 mole of water molecule (6×10^{23})

\rightarrow 1 molar mass of H_2O (18g)

Therefore in rxns & other aspects it's essential to have the correct formula

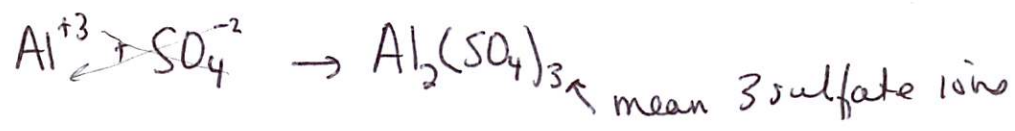
Making ~~car~~ compounds w/ ions \rightarrow easy

Cross Cross Method \rightarrow cross charges of ~~compounds~~ ^{ions}



Simple

For polyatomic use parentheses b/c can't change subscript of ion



Naming ionic compounds are simple (metal + nonmetal ions)
or metal + polyatomic

Name the + ion 1st (usually the metal)

and the - ion 2nd

18. Stock

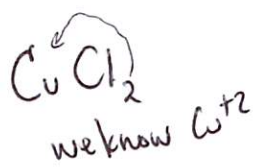
old

Give wkshs

• Criss cross

• my naming wksh (12)

Na Cl Sodium chloride



Copper(II) chloride, cupric chloride

Na OH

Sodium Hydroxide

Naming molecular compounds there is a system (pg 210-211)
we have used it b/fore

CO - carbon monoxide

CO₂ carbon dioxide

CCl₄ carbon tetrachloride

prefixes - 1-mon

2-di

3-tri

4-tetra

5-penta

6-hexa

7-hepta

8-octa

9-nona

10-deca

Rules - 1. Less c-negative 1st. Only give prefix
if more than 1 present.

2. prefix to name for # present

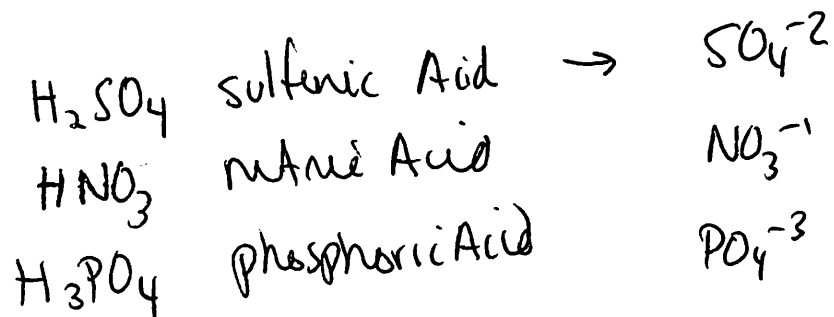
- the ending

Ex CCl₄, As₂O₅, N₂O, N₂O₃, N₂O₅

Acids + Salts → always H in them

Binary acids → Hydrogen + one of the halogens

Oxyacids H + O + other element
↳ b/c have Oxy anions



salt → Cation + anion from acid
~~from an acid~~

Naming acids →

~~H₂Hydro~~ → Binary → -ide → -ic
H → Hydro Chloride → chloric HCl Hydrochloric acid

Oxyacids ate → ic ite → ous

H_2SO_4 → (sulfate) Sulfuric acid

H_2SO_3 Sulfite sulfurous acid

(HCO_3) bicarbonate
↑
bi

pg 212 Q 2, 3, 4

p 230 # 27, 28, 31

Unit C.3

The mole (Atom counting)

Last unit we worked w/ Really small #'s of atoms

This is impossible to do. Cannot get 1 H₂ molec alone.

6.9 billion people

developed.

$$\frac{6.021 \times 10^{23}}{6.9 \times 10^9 \frac{\text{atoms}}{\text{Sec}}}$$

$$8.73 \times 10^{13} \text{ sec}$$

$$8.73 \times 10^{13} \text{ sec} \times \frac{1 \text{ hr}}{3600 \text{ sec}} \times \frac{1 \text{ day}}{24 \text{ hr}} \times \frac{1 \text{ yr}}{365 \text{ days}}$$

g unit. made up by chemists to
of particles. It is like the scientific
dozen.

$$2.9 \times 10^6 \text{ years} = 2.8 \text{ million years}$$

ings

$$1 \text{ doz} = 12 \text{ things.}$$

If we had 1 mol of paper clips ($1 \frac{7}{8}$ ") = 1.78×10^9 miles go to the moon + Back

$$\text{Dist to Moon} = 2.39 \times 10^5 \text{ miles}$$

$$3.72 \times 10^{13} \text{ times}$$

$$\text{to Sun } 9.56 \times 10^7 \text{ miles Sun + back}$$

$$9.3 \times 10^{10} \text{ times}$$

$$93,000,000,000$$

But 1 mol of C = 12.0g of C

↳ means atom is very small!

mol conversions

$$\text{molecules to moles} \times \frac{1 \text{ mole}}{6 \times 10^{23} \text{ molec}}$$

$$\text{moles to molecule} \times \frac{6 \times 10^{23} \text{ molec}}{1 \text{ mol}}$$

Do examples w/ student H'g give wkshk.

then give quick quiz

Molar Mass. We don't use molecules frequently. too small!
we measure in mass g.

Molar mass = # of grams in a mole.

For elements it is the atomic mass in $\frac{\text{g}}{\text{mol}}$

Ex. for C = 12.0 g/mol

N = 14.0 $\frac{\text{g}}{\text{mol}}$

For compounds \rightarrow sum to total mass of all masses

$\text{H}_2\text{O} = 18.0 \text{ g/mol}$
 $2 \times 1 \quad 16 \quad -$

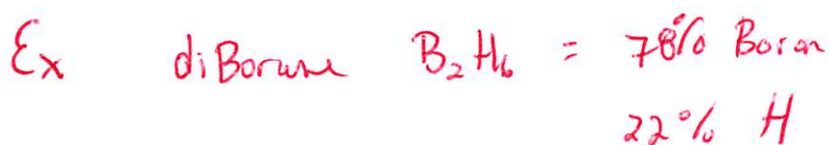
give wkshk the
give quick quiz

Determining formulas from %

- 2 types of formulas → empirical formulas - simplest, reduced fully
- molecular formula - some multiple of emp. form based on molar mass

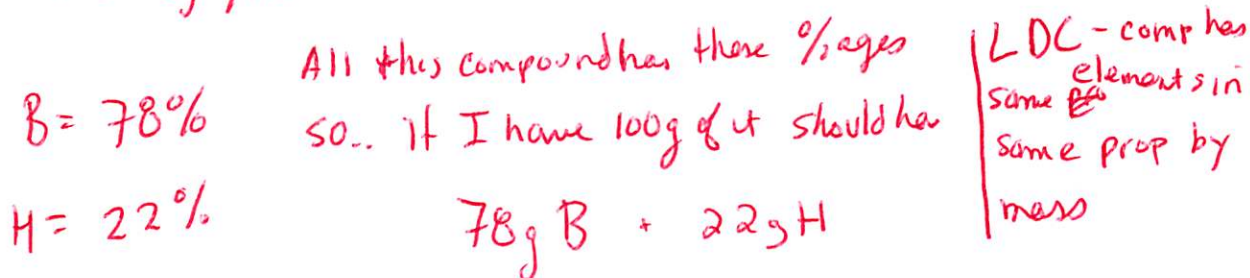
$$(\text{Simple form})_x = \text{mol form}$$

$$(\text{Simple mass})_x = \text{mol mass}$$



so is BH_3 (although very unstable)

Calculate comes by %'s



to compare proportions must compare moles

